MINIMUM CALLING ALTITUDES OF *COPHIXALUS* FROGS ON THORNTON PEAK, NORTHEASTERN QUEENSLAND. *Memoirs of the Queensland Museum 51(2): 572 2005*:- The mountain-top fauna of the Wet Tropic region of NE Queensland are predicted to be particularly vulnerable to increased temperatures associated with global climate change (Williams et al., 2003). Bioclimatic modelling has revealed the *Cophixalus* frogs to be the most severely threatened vertebrate group in the Wet Tropics (Williams et al., 2003). Future monitoring of the *Cophixalus* frogs requires, amongst other things, knowing the current altitudinal range boundaries of species (Hoskin, 2004; Shoo & Williams, 2004). Many of these range boundaries have recently been clarified (Hoskin, 2004; Shoo & Williams, 2004) compared to earlier estimates (Zweifel, 1985; McDonald 1992), but several gaps remain. In particular the altitudinal range boundaries of the two *Cophixalus* species found on Thornton Peak remain poorly known.

Cophixalus concinnus and *C. aenigma* inhabit Thornton Peak. *Cophixalus concinnus* is a high altitude Thornton Peak endemic that is listed as critically endangered under IUCN criteria, due to its limited distribution (estimated to be approx. 7.18 km^2 (Hoskin, 2004)) and a predicted rapid population decline due to global warming (Williams et al., 2003). *Cophixalus aenigma* is a vulnerable species distributed across four disjunct upland areas in the northern Wet Tropics (Thornton Uplands, Carbine Uplands, Finnigan Uplands, and possibly Bakers Blue Mountain) (Hoskin, 2004).

We estimated the altitudinal range boundaries of *C. aenigma* and *C. concinnus* on Thornton Peak by determining the location of calling males under ideal conditions on a single night. The survey was achieved by ascending and descending Thornton Peak via the Queensland National Parks and Wildlife Service trail up the southwestern slope from 200 m above seal level (asl) to the summit (1374 m). The starting point of the ascent was at the junction of two tributaries of Hilda Creek (16°11'16"S, 145°21'27"E). The survey was conducted during the night of 12 March 2004. In excess of 150 mm of rain had fallen in the previous two days and rainfall had been high for several weeks preceding. On the night of the survey conditions for calling activity were ideal: rainfall was moderate, wind was essentially absent, and the temperature at 1100m asl was 18°C. The ascent was conducted soon after dark (18:30), when microhylid calling activity is generally greatest (Hoskin, pers. obs.). An hour was spent around 1100m conducting density transects, and descent occurred from 22:00 – 01:00. The altitude of calling males was determined to within 5 m accuracy using a Casio Pathfinder altimeter, which was calibrated at a known altitude at the beginning of the ascent.

The lowest calling *C. aenigma* male was at 700 m asl (16°10'34"S, 145°21'51"E) and this species was abundant between 740–1000 m, and then less commonly heard, but still present, to the summit. The lowest calling male *C. concinnus* was located at 1080 m asl (16°10'11"S, 145°22'01"E) and the species was abundant from 1100 m to the summit. Two surveys of abundance were conducted at approximately 1125 m (16°10'08"S, 145°22'04"E) in which all males calling within 20 m of either side of a 50 m transect were recorded. There were 16 *C. concinnus* and 4 *C. aenigma* recorded on the first transect, and 30 *C. concinnus* and 3 *C. aenigma* on the second. Between the ascent early in the evening and descent several hours later, there was no difference in the altitude of the lowest calling male of both species. The lower altitudinal limits for *C. concinnus* and *C. aenigma* found in this survey are similar to those determined from data lodged with Queensland Museum specimens collected since the 1970's (Hoskin, 2004).

This survey provides an estimate of the altitudinal distribution of each species on a single transect on a single night. Further surveys are required to assess variation in the lower altitudinal limits of the two species on this transect and across other aspects of Thornton Peak. Additionally, estimates of the density of each species across their altitudinal range, as performed by Shoo & Williams (2004) for other *Cophixalus* species, would be valuable for monitoring the impact of global climate change. In conjunction with this, it is important to determine the effect of microhabitat on altitudinal distribution and abundance. In this survey it was evident that *C. concinnus* was particularly common in areas where vegetation grows amongst large jumbled boulders. Such habitat is characteristic of the higher altitudes of Thornton Peak, but does not appear to be the primary determinant of the lower altitudinal limit of *C. concinnus* as apparently suitable boulder habitat occurred below the lowest calling male (1080 m) down to 900m asl. Whether the lower altitudinal limits of the upland *Cophixalus* are determined by thermal tolerance remains untested.

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